

*Corrections to the Astronomer Royal's Report on the "Preparations for the Observation of the Transit of Venus."* By the Astronomer Royal.

In my report to the Society, on the "Preparations for the Observation of the Transit of *Venus*, 1874, December 8-9," I inadvertently committed some inaccuracies and omissions, of which I ask leave to insert here the corrections.

In speaking (page 7) of the delay of the Kerguelen Expedition at the Cape of Good Hope to September 18, I stated that "they ought to have left two months earlier." This was an error, incident to an oral address, as is obvious from the circumstance that one part of the observers left England on July 5. I intended to express "about a month earlier"; but I now find, on examining the Official Programme, that the delay was about a fortnight.

In pages 7 and 8, after adverting to the anxieties of the officers commanding the ships of war (in properly carrying out their instructions, as then understood) to leave Kerguelen at an early time, I omitted to state that the expedition is very deeply indebted to Commodore Sir William Hewett for his assistance at the critical time. Sir William Hewett received with kindness the Memorandum of Father Perry, and acted upon it promptly in favour of the expedition. This conduct, I believe, has been fully approved by the Admiralty. In this transaction, as in that of sending out the *Volage*, the utmost attention has been given by the Board of Admiralty and their confidential officers to the promotion of the interests of the expedition.

1874, December 22.

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*Telegrams relating to the Observations of the Transit of Venus, 1874, December 9, received by the Astronomer Royal.*

Telegram, Reuter's Telegraph, Constantinople, December 9.

Weather rainy and dark, rendered observations impossible.

Telegram by Eastern Telegraph, from Captain Orde Browne, Mokattam, 1874, December 9.

The egress of *Venus* was observed at Mokattam this morning. There has been much bad weather and anxiety; all well now. Contact seen through very slight haze, with Lee at about  $13^{\text{h}} 22^{\text{m}} 25^{\text{s}}$  sidereal, and with De La Rue  $13^{\text{h}} 22^{\text{m}} 21^{\text{s}}$ . (Observe, in the Greenwich Book of Observations with the Model, my egress is always after other observers', except Mr. Gill's.) Clouds spoilt much double-image work, but many limbs and cusps were

taken; the phases closely resemble those of the model, except a line of light round the planet's edge which appeared with strong sun just after the above contacts; it perplexed me, and made me lose my best cusps; when I found that it continued two minutes, and that it would do so indefinitely, I turned to cusps.

I have exchanged bad telegraph-signals twice with Thebes, and good ones three times with Suez.

Mokattam, co-latitude  $59^{\circ} 58' 14''$ .

Mr. Hunter, from Suez, says, "Sky cleared partly a few minutes before contact; contact satisfactorily observed, and a considerable number of micrometer measurements made."

Captain Abney says, from Thebes, "Beautiful morning, Sun rather shaky at first, nice and sharp at time of contact, and good observations, though differing slightly in time; sun pictures good; the fifty photographs in Jannsen's slides include internal contact; external contact not taken; no black drop apparent in photographs after careful examination."

Telegram by Reuter's Telegraph, Alexandria,  
*Wednesday, 1874, December 9.*

British Government Expedition for observing the Transit of *Venus* in Egypt in conjunction with the Associated Astronomers has been completely successful. The weather has been bad and the sky clouded for the last two days, and this morning the view was interrupted by misty clouds which, however, opened sufficiently to exhibit *Venus*, but not to take measurement until critical instant of contact.

The following made successful observations:—The Chief Greenwich Station at Mount Mokattam, viz., Captain Browne and Mr. Newton; at Suez, Mr. Hunter; at Thebes, Colonel Campbell and Messrs. Auwers and Döllén. A series of fifty photographs were taken at successive instants, including the moment of contact, by Captain Abney. Sir G. B. Airy had exchanged time-signals by telegraph with Captain Browne at Mokattam; Messrs. Ellis and Hunter observing the ends of the submarine cable.

Note by the Astronomer Royal. Longitude of Mokattam station,  $2^{\text{h}} 5^{\text{m}} 6^{\text{s}}.44$ , very approximately.

Telegram from John Burns, Glasgow,  
*Wednesday, 1874, December 9, 2 30 p.m.*

The following telegram regarding the transit of *Venus* has been this moment received: "Barker, Alexandria, to John Burns, Castle Wemyss, Wemyss Bay, Scotland. Egress commenced eight o'clock five minutes forty seconds one-tenth; final egress between eight o'clock thirty-three minutes and eight o'clock thirty-four minutes forty-six seconds; clouds covering the Sun prevented ascertaining precise exit. The Planet looked like a black ball with red under lower circumference. Observations of Mr. Perona taken north, thirty-one degrees, Sun now shining."

Telegram by Reuter's Telegraph, Bushire.

Transit at Indore beautifully observed; interval from commencement to end. Apparent contact,  $4^{\text{h}} 37^{\text{m}} 32^{\text{s}}$ ; interval between two internal contacts,  $3^{\text{h}} 42^{\text{m}} 56^{\text{s}}$ . No black drop appeared.

Telegram from Colonel Tennant, Roorkee, by Teheran line.

Observations here successful; one hundred photographs taken.

Telegram by Reuter's Telegraph.

Observation, at Calcutta, excellent; mean time of ingress of centre was seven fifty-six; middle, ten five; egress of centre, twelve thirteen. At Madras satisfactory observations were almost impossible; endeavours frustrated by cloudy weather. At Kurachee first external contact happened before sunrise at  $10^{\text{m}} 26^{\text{s}}$  past 6; first internal contact was when Sun was about four or five of his diameters above horizon at  $13^{\text{m}}$  before 7; second internal contact about ten thirty-five; last internal contact about eleven three, when Planet quitted Sun not far from its highest point.

Telegram by Reuter's Telegraph, Shanghai, *Wednesday, 1874, December 9.*

During the period of the transit of *Venus* the weather here was overcast and the Sun obscured.

Telegram by Reuter's Telegraph, Nagasaki,  
*Wednesday, 1874, December 9.*

Weather this morning was magnificent, and the transit observations in Japan were most successful: Observed contacts were obtained by revolver photograph [Janssen's]; fine images in the telescope, no ligament, *Venus* seen over Sun's corona; glass photographs and silver plates cloudy at intervals; two members observed successfully Kobe [Hiogo].

Telegram by Reuter's Telegraph, Berlin, *December 10.*

A telegraphic report from Ispahan of the German Expedition sent out to observe the transit of *Venus* has been received. It states that, although the weather was unfavourable, fourteen serviceable photographs were secured; the observations of the contact were materially hindered by the clouds. From St. Petersburg, 10th December, the conditions were favourable at Wladivostock, Yokohama, Arrianda; partially favourable at Possiet, Habarowka, Tschita; totally unfavourable at Omsk, Blagoweschtschensk, Orenburg, Kazan, Uralsk, Astrachan, Kertch, Tiflis, Eriwan, and Naktritchewan. Intelligence is still wanting from twelve stations.

Telegram from Struve, Pulkowa, to Sir George Airy.

Transit of *Venus*: Full success, Wladiwostock, Yokohama, Tschita, Orianda, near Jalta; partial success, Possiet, Habarowka; completely cloudy, Blagoweschtschensk, Omsk, Orenburg, Uralsk, Kazan, Astrachan, Kertch, Tiflis, Eriwan, Naktritchewan. From fifteen stations reports are outstanding.

Telegram from Foerster, Berlin.

Station Ispahan, has got nineteen good photographs in very unfavourable weather.

Telegram by Reuter's Telegraph, Hiogo, 1874, December 9.

Transit of *Venus* successfully observed here: Adelaide, 9th of December, the observations made here have been partially successful; Hobart's Town, December 9th, the American astronomical party here have had partial success in their observations; Melbourne, December 9th, Professor Ellery reports from Melbourne Observatory, that all phases of the transit of *Venus* have been successfully observed.

Telegram by Reuter's Telegraph.

Mr. Ellery, at Melbourne Observatory, reports that all phases of the transit of *Venus* have been successfully observed.

Telegram by Reuter's Telegraph, Constantinople, December 11.

At Beyrout, the observations of the transit of *Venus* were very successful.

Telegram from Mr. Struve, Pulkowa, December 13.

The transit successfully observed at Nertschinsk, Teheran, partially at Kiaktcha; photographs at Possiet after development prove satisfactory.

Telegram from Mr. Russell, Sydney, December 10.

Transit well observed, ingress and egress; 390 (?) photographs; 16 Janssen's plates; no black drop.

Telegram from Major Palmer, Christchurch, New Zealand, *via* Sydney, December 17.

English, nothing valuable anywhere, clouds; Americans got ingress and photographs till near third contact; nobody egress.

Telegram from Capt. Tupman by Anglo-American Telegraph.

Transit of *Venus* well observed, clear weather at Honolulu and Waimea, Atooi; cloudy at Kailua, Owhyhee; sixty photo-

graphs; Janssen failed; internal contact uncertain several seconds; complete disk of *Venus* seen twelve minutes before; 120 micrometer measures.

Telegram by Reuter's Telegraph.

The Netherlands Expedition to observe the transit of *Venus* at Réunion, only half successful on account of obscure sky.

*Computations in regard to the Transit of Venus.*

By J. R. Hind, Esq.

(Extract from a Letter to the President.)

The only observed time of either internal contact of *Venus* pretending to any accuracy which we have yet seen here, is that published in the *Times* of (December 10) as having been observed at Alexandria.

I have had the curiosity to compare this observation with the result of accurate computations; first, with Le Verrier's elements of Sun and Planet, and the semi-diameters recommended by him at p. 40 of the *Introduction to Tables of Venus*, and secondly with Carlini's Sun and Lindenau's *Venus*, and the old *Nautical Almanac* values for semi-diameters.

The observed time of second internal contact at Alexandria to which I have referred is

Dec. 8 at 20<sup>h</sup> 5<sup>m</sup> 40<sup>s</sup>.1 Local Mean Time.

With Le Verrier's elements, I find it

Dec. 8 at 20<sup>h</sup> 5<sup>m</sup> 39<sup>s</sup>

Correction to computed time = + 1<sup>s</sup>

(so very small a difference is no doubt to a certain extent fortuitous.)

With Carlini's and Lindenau's elements, I find it

Dec. 8 at 19<sup>h</sup> 50<sup>m</sup> 46<sup>s</sup>

Correction to computed time = + 14<sup>m</sup> 54<sup>s</sup>.

This comparison shows to how great extent Le Verrier's theories of Sun and Planet have benefited us in respect to this year's transit of *Venus*.

As you may probably be in possession to-day of observed times at one of the normal Egyptian stations, I add my results for Cairo and Thebes, deduced, with every care, from Le Verrier's tables and semi-diameters. The original calculations for Alexandria also accompany this for your satisfaction.